

Horton's drive, and here, amid the reeking moisture, we found a few butterflies on the wing, *Kallima philarchus*, and *Papilio aristolochiae*. I was fortunate enough to witness the courting of two of the latter. It reminded me strangely of that of *Pieris rapae*, only the insects never rose more than three feet from the ground. They fluttered slowly, one a foot or so above the other, for some time without any attempt to pair, disappearing at length into the tangled recesses of the jungle where I was unable to follow them.

In conclusion I must thank Dr. Willey, the curator of the Colombo Museum, for the kindness and courtesy he showed me, and for the pains he took in helping me to identify some of the species I saw during my all too brief stay in Ceylon. Throughout this paper I have followed the nomenclature adopted by de Nicéville and Manders—"List of the Butterflies of Ceylon," *Journal of the Asiatic Society of Bengal*, vol. lxxviii., pt. ii., pp. 170 *et seq.*—for a knowledge of which I am also indebted to Dr. Willey.

A Note on the Dispersal of Coleoptera.

By W. E. SHARP, F.E.S.

Possibly some readers of this Magazine, especially such as may be coleopterists, may remember a graphic account which appeared in its pages in the year 1901 (vol. xiii., pp. 12, 1901) by Messrs. Tomlin and Sopp, of a flight of coleoptera which, presumably emerging under the stimulus of a hot day after cold wet weather from the recesses of the Llanberis valley, rose high in the air, were carried some distance by the wind, and finally dropped into the waters of the Llyn dŷr Arddu, on the flanks of Snowdon wherein many of them miserably perished. This scene was recalled with emphasis to my recollection by an analogous spectacle of which I was a recent witness on the Yorkshire coast.

It will be remembered how, during the early part of last May, a cold N.E. wind dominated these Islands, if not actually checking insect life at least rendering it unobtrusive, how, about the middle of the month the wind suddenly veered to the S.S.W. and the temperature rose 15° to 20° in a day. It was the day after that strong, if transient, touch of summer that I happened to be near Bridlington in Yorkshire, and my attention was there arrested by the enormous number of beetles of various common species crawling on the wet sands or left for drowned by the receding tide on the shores of that bay. Innumerable corpses of *Gastroidea polygoni* dotted the beach like minute blue shells, they fell in clusters from the shaken sea-wrack, and even on the sea-front of Bridlington, its streets, its walls, its benches, they suggested the fourth of the plagues of Egypt.

The explanation of all this seemed not far to seek. The sudden warmth and sunshine after a week or more of cold and gloom had impelled innumerable individuals of a few species over all the arable land that lines the Yorkshire coast, with one accord to take to the wing; rising high in the air they had been carried by the S.W. wind out to sea and therein, either because of a lull in the wind, or simply through the exhaustion of the beetles themselves, dropped, to be partially returned by the-flood tide and cast up on the shore with the weed and flotsam of the sea.

For it seems only probable that these survivors formed but an attenuated minority of the original emigrants, vast numbers must have perished in the open sea and no doubt during that week the fish of the Dogger enjoyed unusual fare. It was on the beach south of the town where I observed these ill-starred mariners in greatest abundance—more precise data as to their numbers here may be of interest. Within one lineal foot, approximately, measured off on the shore, I counted eighty-three specimens of *G. polygoni* between the foot of the cliffs and the sea, and on one flat stone with a superficial area of some two square feet sat no less than one hundred and thirty beetles belonging to about seventeen different species—in fact every large stone on the shore was covered by them there; they sat drying themselves in the hot sunshine rapidly back into life and activity, and it was noticeable that their disastrous experiences in the deep seem to have stimulated rather than damped their amatory fires.

As regards the species represented, all were such as readily occur on cultivated land, clover fields, and the like. *G. polygoni*, already mentioned, was easily first as regards numbers, then came three common species of *Sitones*—*S. flavescens*, *S. lineatus*, *S. crinitus*, four or five *Apiona*, such as *A. pisi*, *A. loti*, etc., then, very abundantly, *Mantura rustica*: the remainder was made up in much smaller proportions by such common *Tachypori* and *Tachini* as *T. rufipes* and *T. hypnoveae*, *Aphodius ater*, *Eunicmus minutus*, sundry common *Rhinonchi* and *Ceuthorrhynchi* and rarely *Hypera polygoni*, in all, perhaps, not more than twenty species, although, among miles of beetles such as there were here, no doubt other and rarer species sporadically occurred.

I have thought the incident worthy of record at some length, because it appeared to illustrate in singularly dramatic fashion a factor which must operate very largely in the dispersal and consequent extension of range of coleoptera. Both it and the Llyn dŵr Arddu record as well as observations made on Coleoptera casually occurring on the summit of Ben Nevis (see *Annals of Scottish Natural History*, January, 1895), reported by Rev. A. Thornley, F.L.S., etc., seem to imply that a hot sunny day after cold and wet weather acts on beetle-life as an extraordinary stimulus to active, extensive, but apparently undirected, flight.

The operative agent of dispersal is undoubtedly the wind, not migratory instinct, in the proper sense of the term, on the part of the beetles, and, although at first it may appear difficult to understand how such a habit (of undirected flight) could have arisen, of which the result might be to the majority of the participants in it, irretrievable disaster, still it must be considered that such results are very largely local, partial, and due to the accident of insularity, and that, in larger continental areas, such a tendency might be conducive rather to the welfare of the species by the extension of its range than inimical by the destruction of a large part of its members.

Moreover, we may, perhaps, I venture to think, obtain some idea of how largely this habit of impulsive flight may imply the difference between species which are "common" everywhere and those which, for no physiological reason which we can detect, are generally rare or abundant only quite locally—for the former, their environment ceasing to be adapted to their needs, are in this way involuntarily moved on to "fresh woods and pastures new," while the latter, owing to their

immobility, perish in an environment which can no longer maintain them.

The Lepidoptera of the Grisons—Sus to Guarda.

By J. W. TUTT, F.E.S.

The morning of August 9th broke cloudless. Dr. Chapman had already some years ago made Guarda the centre of a long series of most successful collecting expeditions, so I thought I would like to see the village of Guarda, perched up on the side of the mountains, and overlooking for a long distance east and west the valley of the Lower Engadine. Two attempts were made to reach the village, both by way of Lavin and then over the mountain side to Guarda, both failed lamentably owing to the cupidity of the collector, on these delightful sunny days of August 9th-10th. They were just glorious. I have heard similar days described by all sorts of names—blazing, tropical, unbearable—but they were just glorious; they dried out all the accumulated wet and cold of the Fluela and one could at last live. There were millions of *Pieris brassicae* everywhere, the thistles in the cornfields near the town, abundant as they were, could not hold a tithe what wished to settle there; the thistles on the roadside and slopes dropping to the river as soon as one left the town swarmed with them, they were everywhere. The natives seemed to look on the butterfly-hunter as a godsend, for the white butterflies were a veritable plague. The larvæ had devoured much of the garden produce, one suspected that a month later there was not even the skeleton of a cruciferous plant left in the district. *P. rapae* was also abundant, but not in the way that its larger relative was. Almost before the town was left behind the sport began. When one is in England, one does not catch lots of insects for various reasons, e.g., *Pyrameis atalanta*, *P. cardui*, *Vanessa io*, *Parnassius apollo*, *Argynnis adippe*, *A. aglaia*, *Colias edusa*, *C. hyale*, *Hipparchia semele*, *Euranessa antiopa*, *Aglais urticae*, *Epinephela janira*, *E. lycaon*, *Hesperia carthami*, and so on; when one is abroad one does catch them, and I had caught all these, except *E. antiopa*, which I missed—easily, in less than half-an-hour. One persuades oneself that it is necessary to get samples of everything one sees, if one is to report on the fauna of a place, one further persuades oneself that it is not safe to report anything one thinks one sees unless one handles it, and so one persuades oneself that one catches it for every reason except the real one, the pure, sheer, love of hunting. It was, indeed, a great pleasure to see *Parnassius apollo* again, the first I had seen this summer; it was grand to see *Euranessa antiopa* on the wing even if it did prove to you again, that it is far more alert than yourself, and, as for the large Vanessids on a thistle-bloom, what can be more lovely? But, although these and many more were seen on the steep flower-covered banks near Sus, other things soon attracted attention; a hasty bustling moth, with strange flight, necessitated a dash, and soon one was somewhat surprised to find a ♂ *Malacosoma castrensis* in the net, a little further on some fairly sized trees rather than bushes covered with webs, from which large numbers of *Hyponomeuta* (sp. ?) were emerging, this insect being quite one of the features of the valley; a steep rocky slope with a number of trees at its foot, proved the home of a fine large dark race of *Hipparchia*